AR41

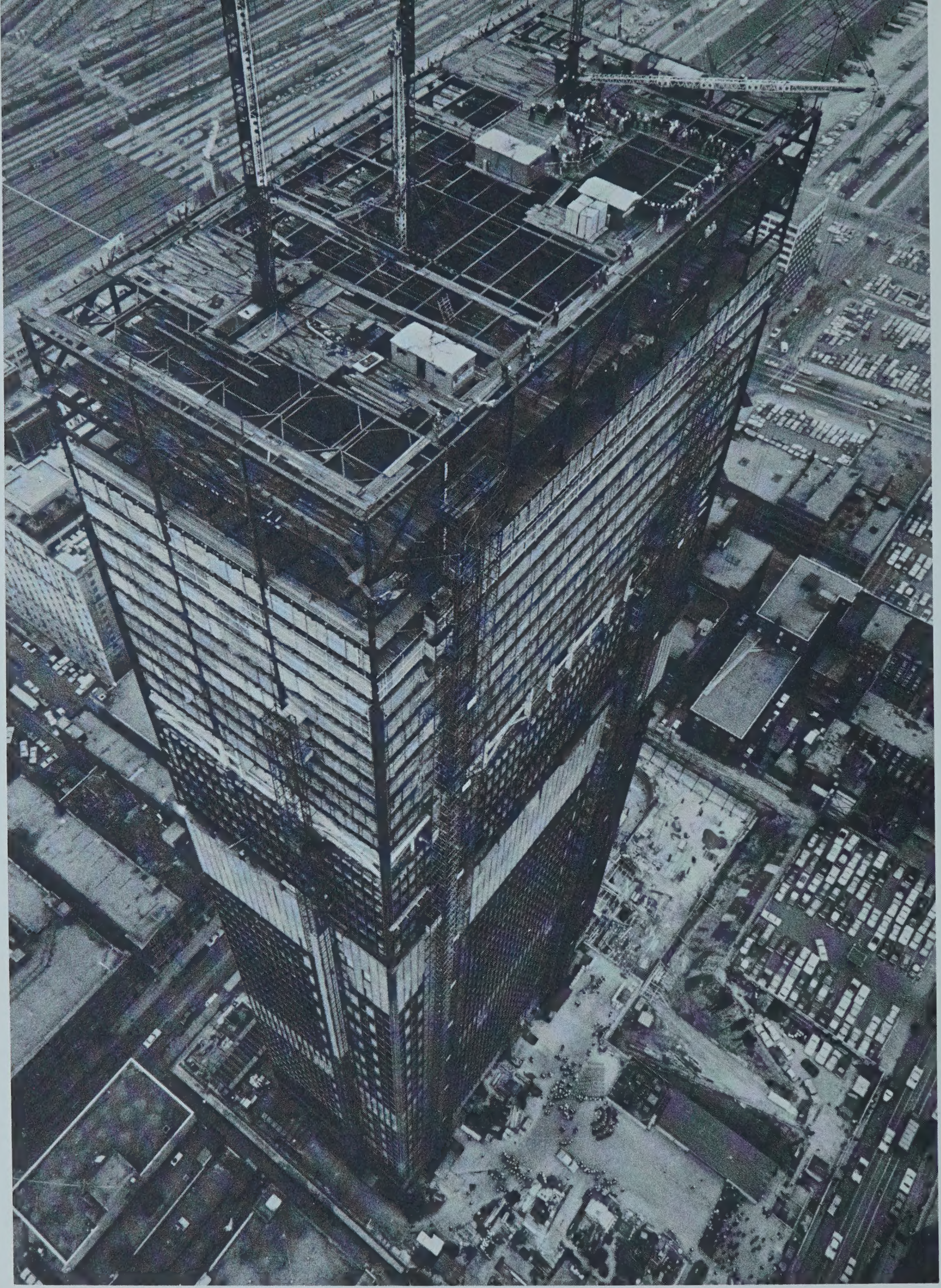
TORONTO-DOMINION CENTRE REPORT

Sixth in a series of news bulletins published by Toronto-Dominion Centre Ltd.

6

June 1966

A fanfare of 'trumpets'. Bandsmen of the Governor General's Horse Guards salute as the Toronto Dominion Bank Tower's last beam heads for the top.



There are three notable occasions in the construction of any great building. One is the turning of the first sod, giving proof that at last the dreams, hopes, and plans of the developers are going to be given reality. One is the official opening, a time for all concerned to shake each others' hands and murmur "well done!"

Somewhere in time between these two is another occasion, important to those concerned with construction but perhaps even more important to those not so vitally concerned — prospective tenants, neighbours, and casual passers-by. This is the moment when the steel framework, which they have watched climbing day by day into the sky, reaches its ultimate height, if not its ultimate grandeur.

For the Toronto Dominion Bank Tower, this happy event occurred shortly after noon on Thursday, April 14th, 1966. And it *was* an event, marked for a large group of guests, official and unofficial, by a band, fireworks, and the hoisting of the final beam, be-flagged and glistening in gold paint, the full 56 storeys to the top.

Our covers and centre spread tell the story.

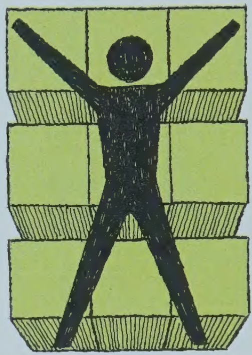
If laid end to end . . .

The Toronto Dominion Bank Tower is a handsome structure. It is a modern structure. It will be a functional and rewarding structure for its occupants.

It is also an imposing structure, not only in the way in which it dominates the Toronto skyline but also by virtue of its own dimensions.

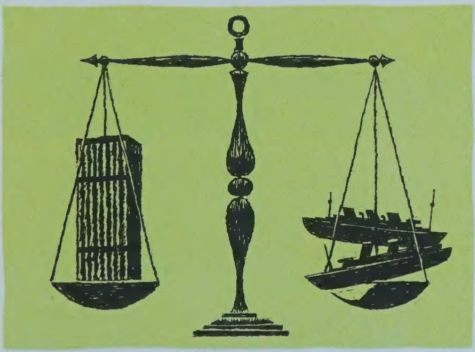
For example:

There are approximately 22,000,000 cubic feet of space within the walls of the Tower. If we deduct approximately 3,000,000 for core and other solid space, we have roughly 19,000,000 cubic feet of what might be termed "occupyable" space. Since even a good-sized man occupies only about nine cubic feet, this means that the entire population of the city of Toronto could be fitted into the Toronto Dominion Bank Tower . . . without anyone being particularly crowded . . . though perhaps a little cramped.



To build the core and certain other areas, more than 1,000,000 concrete blocks will be required. Each block is 16 inches long. So if all the blocks which will go into the Tower were piled end to end, we would have a structure rising some 1,330,000 feet into the air . . . or 252 miles. On a clear day, you could see it from Denver.

The word "million" keeps cropping up in any discussion of the Toronto Dominion Bank Tower. For instance, the Tower's floors will be covered with close to 1,000,000 vinyl asbestos tiles, each one foot square. That's a lot of tile, enough to cover eleven football fields. Of course, they would be football fields on which the traction wasn't too good, especially with cleats. They'd last a long time, though, and be almost impervious to wear and tear.



The structural steel framework of the just-topped-off Tower is held together by welds and by bolts, exactly 497,954 of the latter. Is that a lot of bolts? Well, if you were passing them by hand to somebody else, at the rate of one each second, it would take you almost two months to do it . . . and you'd be pretty tired toward the end.

The Tower isn't very heavy: just 140-odd thousand tons, hardly as much as a couple of boats . . . if by boats you mean the *Queen Elizabeth* and *the Queen Mary.*

When we speak of projected daily water consumption in connection with the Toronto Dominion Bank Tower we come up once more against that magical number "one million". A million gallons of anything is of course more than anyone could drink at a sitting, but just how much *is* it? Well, in terms of the stuff that comes in 25-ounce bottles, it's 466,666.7 cases. For the teetotaller, it's nearly 20,000,000 regular size bottles of his favourite soft drink.

Of electrical wiring of all sizes and types, the Tower contains around 1,540,000 feet. This is enough to let you set up your own telegraph line to Ottawa, with enough left over to get a message to Brockville. Put another way, it's enough to let you drop four loops over the Toronto and Hamilton city halls.

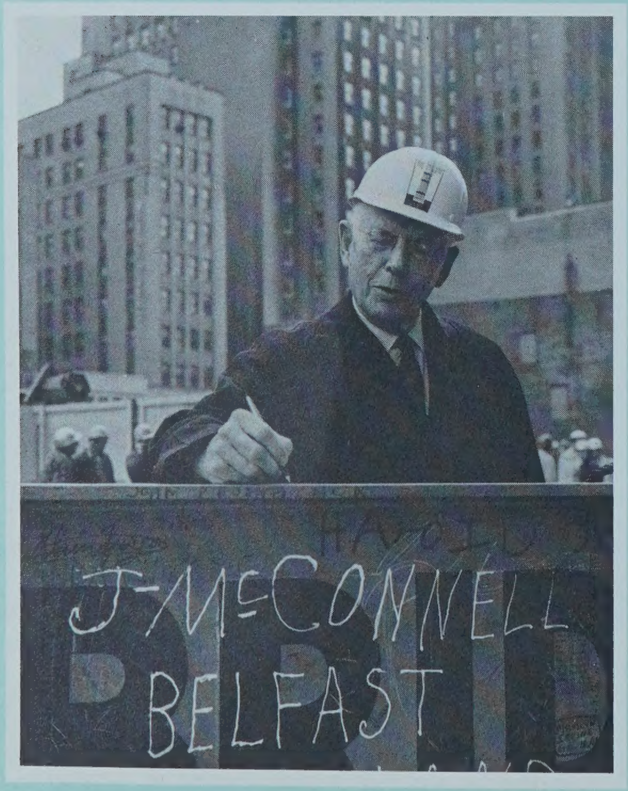
Lastly, the cooling capacity of the Tower's refrigeration plant — a key part of the most modern air-conditioning system to be found in the building world — is equivalent to producing 6700 tons of ice every 24 hours. How many Martinis would that cool?

PERSONALITIES AT A "TOPPING OFF"

UPSTAIRS — SOME OF THE MEN WHO BUILT IT

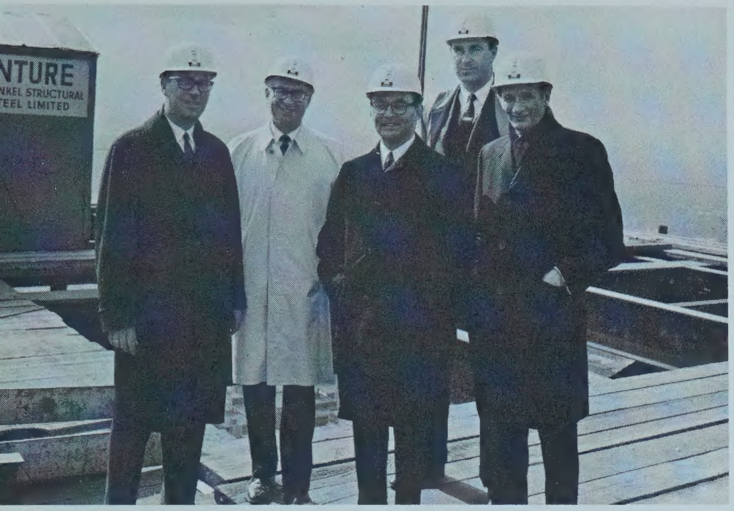
Creation of the Toronto-Dominion Centre is attracting increasing interest outside Canada's borders. Photographs of the topping off of the Tower appeared not only in newspapers in large U.S. centres such as New York, Chicago, Boston, and Detroit, but also in dozens of small cities like Goshen, Ind., Tiffin, O., Hinton, W. Va.

A TALE OF TWO BUILDINGS. CHARLES R. BRONFMAN, MAYOR PHILIP GIVENS, ALLEN T. LAMBERT,



HON. LESLIE FROST AUTOGRAPHS THE LAST BEAM

GORDON C. GRAY, SIDNEY BREGMAN, THE MAYOR, JOHN FINDLAY, R. M. THOMSON, W. ERIC ADAMS, C.B.E.



CARLETON, NAT GESSER, E. LEO KOLBER, NEIL R. WOOD,
J. ROTHSCHILD,

WILLIS SPARKS, AT 66, HELPED PLACE THE FINAL, GOLD-PLATED BOLT

SAMUEL BRONFMAN ALLEN T. LAMBERT,

S. T. PATON, E. LEO KOLBER, CHARLES R. BRONFMAN, THE MAYOR, ALLEN T. LAMBERT,

CHARLES R. BRONFMAN,
SAMUEL BRONFMAN

DOWNSTAIRS — INVITED GUESTS WATCH AND LISTEN

QUALITY CONTROL

THE EXECUTIVE ARCHITECT OF THE TORONTO DOMINION BANK TOWER DESCRIBES SOME OF THE PRECAUTIONS AND PROCEDURES WHICH GOVERNED ALL PHASES OF THE PLANNING AND CONSTRUCTION OF CANADA'S NEWEST AND FINEST BUILDING.

Architects and engineers may use the highest degree of skill and care in designing a building and preparing drawings and specifications for its construction, and yet the building could turn out to be unsatisfactory if insufficient control was exercised over its construction. Therefore quality control of construction is almost as important a part of the architect's and engineer's function as are design and the translation of design into drawings and specifications.

The main purpose in quality control of building construction is to ensure that the building is constructed in the manner indicated on the drawings and as specified and to ensure that inferior methods of construction and inferior materials are not used. Principally it consists of inspection, sampling and testing at all stages of construction. It begins before a shovel is put into the ground and does not end until the key is turned over to the owner.

The tall, slim buildings of today, like the Toronto Dominion Bank Tower, require more carefully engineered foundations than their squat, bulky predecessors, hence quality control at the Tower began with a careful and skilful exploration of the rock which was to support its foundations. Boreholes were made by precise, high speed flight augers. Soil samples were taken at various depths and examined, classified and tested to determine their load carrying capacity. The water table was established and its influence on the foundation design evaluated.

The density of modern urban growth makes the location of large buildings on their property more critical than ever before. Hence accurate surveys of the Tower in its early stages of construction were made by qualified land surveyors to ensure that the foundations were properly located with respect to property lines and nearby buildings.

Foundation design is more varied than it used to be to cope with a variety of subsurface conditions. If friction piles are used, care must be taken to see that they are driven to the proper resistance. If footings are used the soil must be examined and tested to verify that it has the anticipated load carrying capacity. Loads tests must be made in case of doubt. At the Tower, where the foundations were taken to bedrock, the rock was tested before the concrete was placed.

The foundations of most large structures today ar of reinforced concrete. The Toronto-Dominion is no exception. Because concrete is manufactu the site and because the hardened concrete car pretested for its properties and because tests concrete cannot be concluded until 28 days af concrete is used in construction, concrete unc more testing and inspection than almost any otl terial used in construction. The location of ste forcement is critical structurally and must be c carefully. Concrete quality at the Tower was by making slump tests and by making cylindrica mens for testing the compressive strength of th ened concrete. Care was taken to see that th crete was properly cured. In cold weather the c was kept at proper temperatures throughout th critical stages of hardening. During placing a wa kept to see that placing was done properly. Im placement can ruin good concrete.

Once the foundations are complete the remain cavations must be filled to the proper levels to floors and exterior works such as paving, wal landscaping. Care was taken to see that suitab terial was used as fill and that it was consolidat ably for the load it had to bear. Optimum moistu tent of soil used for fill was determined by lab tests in order to ascertain the appropriate ma density.

The superstructures of most large buildings are either of reinforced concrete or structural steel. perstructure of the Toronto Dominion Bank Tow sists of structural steel. The steel had to be verifie type and strength by examination of mill test Fabrication of steel members in the shop was ins to see that it met specifications. Before any fab began, the fabricator's shop drawings were ex to make sure they presented a correct interpreta the structural and detail requirements. Finally fi spection and tests were carried out to ensure th strength bolts were tightened to the correct torq that welds were made properly. Construction tol were checked to ensure that they had not be ceeded.

Metal and glass wall cladding of today's tall bu require the most careful quality control in o remain weathertight at high wind velocities. Tower sealing materials were selected with ca application procedures were carefully reviewed drawings were closely scrutinized before fab and all necessary corrections were made. Toleran critical and must not be exceeded. Shop inspectic be carried out to ensure proper fabrication.

Various other building components made of met be examined and shop inspected in the same way numbers of shop drawings must be studied an fully corrected and altered. Metals, connectio finishes must all be examined and tested.

What other building in Toronto will have all of these? *

- A full-scale shopping concourse?
- Indoor parking, initially, for 560 cars?
- A 700-seat theatre?
- A spacious, landscaped plaza?
- A post office?
- An observation gallery 55 storeys above the street?
- Cafeteria and restaurants to suit every purse and taste, including a gourmet's paradise "on the roof"?
- 32 high-speed computer-programmed passenger elevators?
- Floor-to-ceiling windows everywhere?
- Built-in access to radio, television, and background music?
- Accommodation on a single floor for tenants requiring from 510 to over 27,000 square feet?

The foundations of most large structures today are made of reinforced concrete. The Toronto-Dominion Centre is no exception. Because concrete is manufactured on the site and because the hardened concrete cannot be pretested for its properties and because tests of the concrete cannot be concluded until 28 days after the concrete is used in construction, concrete undergoes more testing and inspection than almost any other material used in construction. The location of steel reinforcement is critical structurally and must be checked carefully. Concrete quality at the Tower was verified by making slump tests and by making cylindrical specimens for testing the compressive strength of the hardened concrete. Care was taken to see that the concrete was properly cured. In cold weather the concrete was kept at proper temperatures throughout the early, critical stages of hardening. During placing a watch was kept to see that placing was done properly. Improper placement can ruin good concrete.

Once the foundations are complete the remaining excavations must be filled to the proper levels to support floors and exterior works such as paving, walks and landscaping. Care was taken to see that suitable material was used as fill and that it was consolidated suitably for the load it had to bear. Optimum moisture content of soil used for fill was determined by laboratory tests in order to ascertain the appropriate maximum density.

The superstructures of most large buildings are made either of reinforced concrete or structural steel. The superstructure of the Toronto Dominion Bank Tower consists of structural steel. The steel had to be verified as to type and strength by examination of mill test reports. Fabrication of steel members in the shop was inspected to see that it met specifications. Before any fabrication began, the fabricator's shop drawings were examined to make sure they presented a correct interpretation of the structural and detail requirements. Finally field inspection and tests were carried out to ensure that high strength bolts were tightened to the correct torque and that welds were made properly. Construction tolerances were checked to ensure that they had not been exceeded.

Metal and glass wall cladding of today's tall buildings require the most careful quality control in order to remain weathertight at high wind velocities. At the Tower sealing materials were selected with care and application procedures were carefully reviewed. Shop drawings were closely scrutinized before fabrication and all necessary corrections were made. Tolerances are critical and must not be exceeded. Shop inspection must be carried out to ensure proper fabrication.

Various other building components made of metal must be examined and shop inspected in the same way. Large numbers of shop drawings must be studied and carefully corrected and altered. Metals, connections and finishes must all be examined and tested.

Structural steel and steel deck has to be protected from fire by sprayed-on insulation because of the high thermal expansion of steel. The thickness and soundness of the fire insulation must be checked. The application must be inspected to see that it conforms to manufacturer's instructions.

Roofing, waterproofing and thermal insulation are applied to all buildings for protection against the elements. In order to ensure that they will give the best possible protection for as long as possible at the Toronto Dominion Bank Tower, their design and installation were given the most careful consideration. Unusual factors at the Tower like high wind velocity at some 740 feet above ground were carefully assessed.

The controlled environment is becoming a mandatory requirement for all modern buildings with the result that a larger share of the construction dollar than ever before is being spent on mechanical and electrical services. Apart from the careful selection of well qualified mechanical and electrical consulting engineers, there were two ways in which control of quality for mechanical and electrical services was achieved at the Toronto Dominion Bank Tower. They were by specifying materials of established quality and by providing highly qualified field inspection, thereby insuring that the installations are carried out in complete accordance with plans and specifications with respect to both workmanship and materials. For example, constant checks are being made as to gauges, size, quality, and location of ductwork, piping, insulating materials, etc. Particular attention is also being paid to avoiding interference problems between the various trades so that the resulting job will permit ease of operation and normal system changes and maintenance to be carried out with minimum cost and disturbance to occupants.

The great variety of finishes used in the Toronto Dominion Bank Tower make the most exhaustive demands upon inspection procedures and techniques. Examination must be painstaking and extensive. Some of the finishes involved are acoustic ceilings, ceramic tile, terrazzo, marble veneer, granite, glass mosaic, resilient flooring and painting. Samples of specified materials, colours and sheens were obtained, compared and approved. During installation surfaces to receive finishes are tested for cleanliness, dampness and other relevant properties. Examination included the use of proper tools and proper skill of workmen. Storage of materials is sometimes critical and must be checked. Care has been taken to see that finishing is carried out in surroundings which are properly heated, ventilated, cleaned and protected.

Sidney Bregman
John B. Parkin Associates and Bregman & Hamann

Here are some of the advantages of moving into the Toronto Dominion Bank Tower!

PRESTIGE

participation in what will unquestionably be Canada's most exciting and outstanding architectural development of our time.

QUALITY

design, materials, and construction very much superior to those of the average office building — ample assurance that quality, prestige, and appearance will endure.

LOCATION

the most important business location in Canada: King and Bay Streets in Toronto.

SPACE EFFICIENCY

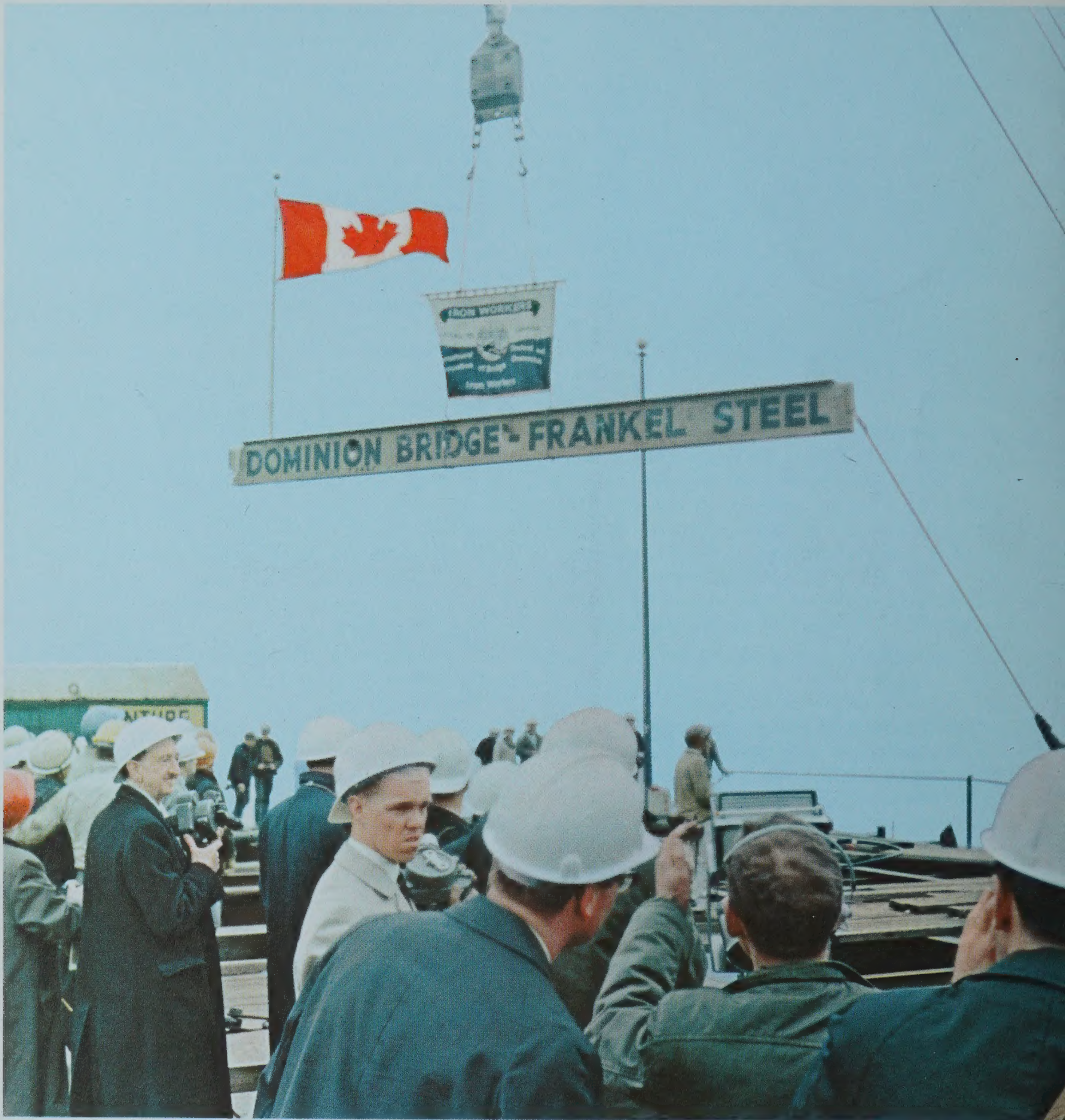
column-free space and economy in design, resulting in space savings of 10% to 20% with a corresponding saving in rental dollars.

SPACE FLEXIBILITY

the Tower's floors of over 25,000 square feet can accommodate the largest or smallest tenants, whether their requirements are 510 square feet or several floors.

MANAGEMENT

all the advantages of an institutional landlord, along with assured continuity of ownership and management throughout the term of your lease.



Toronto-Dominion Centre representatives . . . high-steel men, construction workers, and engineers . . . members of the press . . . watch as the last steel beam swings into place over the 56-storey Toronto Dominion Bank Tower on April 14, 1966.

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